

REMARKS

This amendment is in response to the Office Action dated October 29, 2003. Upon entry of this amendment, claims 1, 3, 5 – 13, 16 – 18, and 20 – 23 are pending in this application. Applicant amends claims 1, 7, and 23 to more particularly point out and distinctively claim the present invention. In particular, Applicant has added the limitation of the hinge associated with the paper form to create the puppet. Support for this amendment is found in the specification, and in originally presented claims 3 and 15.

Finality of the Rejection

Applicant hereby requests reconsideration of the finality of the rejection of this office action. Applicant respectfully submits that the final rejection is premature and improper. Specifically, Applicant refers to MPEP §706.07(a) which states:

A second or any subsequent action of the merits in any application or patent involved in reexamination proceedings should not be made final if it includes a rejection, on prior art not of record, of any claim amended to include limitations which should reasonably have been expected to be claimed.

The McMenimen reference was not previously of record, and Applicant respectfully submits that the prior amendment to the claims to include the specific on-line training laboratory, a key feature of one embodiment of the invention, was reasonably expected. Accordingly, Applicant respectfully requests that the finality of the office action be reconsidered.

Rejection Under 35 USC §103

To expedite prosecution of the present application, Applicant presents the following arguments against Enchanted Learning and McMenimen et. al. These arguments, however, should not be deemed as an admission by Applicant that McMenimen or Enchanted Learning is a prior art reference against the present invention. Applicant reserves the right to remove the McMenimen and/or Enchanted Learning reference(s) as a prior art reference at a later date by way of Declaration under 37 CFR 1.131.

The Examiner rejects claims 1, 3, 5, 7-8, 12-13, 15-18 and 20-23 under 35 USC §103 as unpatentable over Enchanted Learning, in view of McMenimen. Applicant respectfully traverses this rejection and submits the claimed invention is patentable over the cited references.

Applicant submits that Enchanted Learning is not a proper reference under 35 U.S.C. §103(a). Since the Enchanted Learning reference is a website and the date of publication for all pages is not clearly identifiable, it is uncertain whether, and to what extent, the website is an effective prior art reference. The website printout provided to Applicant appears to describe some events in March 2000, however most of the printout is dated November 21, 2002 in the bottom right-hand corner of the document. Further, many of the materials, such as the pages entitled Puppets and Marionettes and Paper Frog Puppet, are stamped with a copyright notice bearing "copyright ©2000-2002." Thus, it is not clear when this content was actually published. The Examiner's attention is respectfully drawn to MPEP §707.05(e) providing guidelines for citing electronic documents. Applicant respectfully requests that the Examiner provide a citation for Enchanted Learning in compliance with the guidelines listed in MPEP §707.05(e), including the date when the document was retrieved from the electronic media in square brackets following the date of publication. Accordingly, Applicant submits that the 35 U.S.C. §103(a) rejection is improper and respectfully requests that it be withdrawn.

To expedite prosecution of this application however, Applicant traverses the rejection of the Enchanted Learning website on its merits. When rejecting claims under 35 U.S.C. §103, the Examiner bears the burden of establishing a *prima facie* case of obviousness. To establish a *prima facie* case, three basic criteria must be met: (1) the prior art must provide one of ordinary skill with a suggestion or motivation to modify or combine the teachings of the references relied upon by the Examiner to arrive at the claimed invention; (2) the prior art must provide one of ordinary skill with a reasonable expectation of success; and (3) the prior art, either alone or in combination, must teach or suggest each and every limitation of the rejected claims. The teaching or suggestion to make the claimed invention, as well as the reasonable expectation of success, must come from the prior art, not Applicant's disclosure. *In re Vaeck*, 20USPQ2d 1438 (Fed. Cir. 1991); MPEP §2142.

If the Enchanted Learning reference is treated as a proper reference, Applicant submits that Enchanted Learning and McMenimen, taken alone or in combination, fail to disclose or suggest all limitations of Applicant's independent claims. Applicant respectfully submits that the *prima facie* obviousness is not established and the claims of the present invention are patentable over the cited references.

The Enchanted Learning website, as best understood by the screen shots provided by the Examiner, appears to show nothing more than encyclopedia type content along with various craft projects that users can download. In sum, Enchanted Learning does not provide a comprehensive system of communication as claimed by the present invention. The Examiner

states that Enchanted Learning discloses a hinge attached or integrated to the paper form. Applicant does not see that Enchanted Learning teaches one or more images in a computer environment, the one or more images having a hinge area. At most the Enchanted Learning website appears to show crafts that may be constructed in a variety of ways. For example, the "Puppets and Marionettes" screen of the Enchanted Learning website shows puppets that can be made of Styrofoam trays and drinking straws, a ladybug puppet made of two paper plates, and a puppet made from a paper bag. Many of the examples given require paper connectors, string and other additional items to construct the craft. Only *instructions* regarding how to make such crafts are provided by Enchanted Learning.

The Examiner does state that Enchanted Learning fails to disclose interacting with an on-line training laboratory on the puppet. The Examiner then points to McMenimen as teaching an interacting on-line training laboratory, and suggests that one would be motivated to combine the system of McMenimen and Enchanted Learning for the advantage of providing a puppetry based communication method that can offer better customer service/fulfillment by training the users on how to properly use the puppets downloaded from the system. Applicant disagrees. The present invention provides a communication platform, it does not simply show one how to properly use a puppet. The present invention uses paper in communication systematically to apply principles of brain science. The present invention, a systematic application of play, demonstrates that play energy can be harnessed via a system of communication employing paper and the symbolic character of puppet art. Play is increasingly recognized as a scientific "product," a definable, fully differentiated, separate state of mind. See attached references: Book Review in Science News, *Einstein Never Used Flash Cards: How Our Children Really Learn and Why They Need to Play More and Memorize Less*; and Poster presented at the PAS 2003 conference. The present invention does not merely teach one how to properly use the puppets.

Applicant respectfully submits that McMenimen adds nothing more. McMenimen is directed to a system providing training in various occupational skills, McMenimen does not teach or suggest a communications platform which promotes play with a puppet. The system of McMenimen is configured to monitor and track a trainee's progress throughout training (col. 2, lines 40-43). The system of McMenimen is configured to provide logical training sequences with one or more queries for evaluating the trainee's comprehension of one occupational skill and in response to the trainee's answers to the one or more quires, and to modify the logical training sequence until the trainee reaches a satisfactory level for the one occupational skill. McMenimen does not teach or suggest a puppetry based communication method. McMenimen does not teach or suggest providing one or more images in a computer environment which have a

hinge area adapted for hand manipulation. McMenimen does not teach or suggest affixing a hinge to paper forms to create a puppet. McMenimen does not teach or suggest developmental segments having multiple audio and video files containing content which facilitates learning and communication in connection with play with a puppet as recited in Applicant's claims.

Applicant further submits that there is no motivation to combine the teaching of Enchanted Learning and McMenimen. McMenimen is directed to training users in a particular occupation. Multimedia scenarios are defined showing a plurality of scenes depicting a simulation of an occupational skill, and queries are made to evaluate the trainee's comprehension of the occupation skill. McMenimen does not contemplate a puppetry based communication system. Enchanted Learning does not contemplate a puppetry based communication system, but merely shows different types of puppets and crafts and how to construct them. After reading both references, one would not be motivated to combine the teachings of Enchanted Learning and McMenimen. Further, even if one were to attempt to combine the two references, one would not arrive at Applicant's claimed invention.

Thus, each and every limitation of the claims are not taught or suggested by the cited references, and that the rejection fails with respect to all of the rejected claims for the reasons stated above.

The Examiner next rejects claims 6 and 11 under 35 U.S.C. 103(a) as obvious in light of Enchanted Learning website, further in view of McMenimen, and further in view of Katz (US pat. no. 5,009,626). Applicant respectfully traverses this rejection and submits that the amended claims are patentable over the cited references.

As discussed above the Enchanted learning website and McMenimen do not teach or suggest the present invention. Applicant respectfully submits that the Katz reference adds nothing more. Katz is directed to forming a three-dimensional lifelike representation of a head portion of a real life-like subject formed by imprinting the head portion on a flexible of sheet fabric material and applying to a computed selected substrate structure of configuration and size matched to the printed representation of the head of the subject.

Katz does not teach or suggest a communications system as claimed in the present invention. Katz appears to teach nothing more than computer manipulated paper dolls. Applicant sees no motivation to combine Katz with McMenimen for the same reasons as described above with respect to any combination of Enchanted Learning and McMenimen. Even

if one were to combine Katz, Enchanted Learning and McMenimen, one would not arrive at the communication system and method of the present invention as claimed.

In summary, the puppetry-based communication system and method of the present invention employs a paper media, the images with a hinge adapted for hand manipulation to form puppets, as a physical "transmitter." The present invention builds on scientific foundations of brain science, and by employing common artifacts and paper with the use of the hinge creates a symbolic, hand-driven language. The puppetry-based communication system and method of the present invention includes, but yet goes significantly beyond the use of standard components of a web site. It provides the basis for the user to leap from a passive craft, crayon coloring, or paper folding activity of the prior art, into a mode of communication capable of systemically activating classroom experience in three distinct areas usually resistant to change: behavior, communication, and content. Applicant respectfully submits that such a system and method is novel, non-obvious and a significant advance in the field.

Applicant respectfully submits that the present application is now in condition for allowance, and a Notice of Allowance is respectfully requested. If any matters can be handled by telephone, Applicant requests that the Examiner telephone Applicants' attorney at the number below.

If necessary, the Commissioner is authorized to charge any additional fees or return any over payments to Deposit Account No. 50-2319 (Order No. A-69185/MSS (468984-1)).

Respectfully submitted,

By: 

R. Michael Ananian, Reg. No. 35,050
/for/Maria S. Swiatek,
DORSEY & WHITNEY LLP

DORSEY & WHITNEY LLP
Four Embarcadero Center, Suite 3400
San Francisco, CA 94111-4187
(650) 494-8700
(650) 494-8771

Books

A selection of new and notable books of scientific interest

Einstein Never Used Flash Cards: How Our Children Really Learn And Why They Need to Play More and Memorize Less

Kathy Hirsh-Pasek and Roberta Michnick Golinkoff, with Diane Eyer

Numerous products target parents trying to jumpstart their infants' intellectual development. Hirsh-Pasek and Golinkoff are two developmental child psychologists who argue that the sounds of Mozart and the effort of flash card drills are futile in developing creativity and critical thinking, the benchmarks of intelligence. They also deride the notion that faster, earlier learning is better. They encourage parents to allow children to learn problem-solving and creativity through play rather than through scheduled activities, organized classes, and other structured events. The authors cite a wealth of research indicating that children who learn through play also develop social and emotional skills that serve them throughout life. The book provides data that contradict the belief that memorization fosters long-term retention or higher IQs. The authors bridge the gap between scientific research and parenting skills to explain how children learn and what parents can do to encourage them. The book describes how everyday games and other activities can foster learning. For instance, there's math in sharing French fries or cutting a cake. Shapes are everywhere, and therefore so is geometry. The authors assert that this type of awareness will help parents [and teachers] cultivate smart, well-rounded, and less anxious children.

Rodale 2003, 302 p. hardcover, \$22.95

The common perception of play as the sole domain of early childhood education is changing. As the review of this book in Science News shows, play is fast becoming a subject of research for brain science. Puppetools is advancing play research with its special focus on communication—not just with younger children but throughout the spectrum of education, including middle, high school, and college level language instruction. We have conducted ground-breaking work in brain imaging. Eventually, we hope to show clear, scientific reasons behind the so-called magic and power of puppet play and to showcase its power in the hands of pioneering teachers across the globe.

JP

Novel Motor/Somatosensory Activity is Associated with Increased Cerebral Cortical Blood Volume Measured by Near-Infrared Optical Topography

Jeffery L. Peyton, W. Thomas Bass, Bonnie L. Burke, and L. Matthew Frank



ABSTRACT

Background: Recent reports suggest learning is enhanced by spontaneity, emotion and play. The neurophysiologic mechanisms of this enhancement are not quite complex and may involve association with changes in blood flow and volume. The purpose of this study was to examine the relationship between spontaneous motor/somatosensory activity and cerebral blood volume (CBV) during novel versus non-novel motor/somatosensory activity would imply enhanced neuronal stimulation and provide insight into the complex relationship between play and learning.

Objective: To determine if CBV increases during activity that integrates specific motor/somatosensory tasks in a spontaneous playful manner (novel-integration cue, Novel-IC) compared to integration of the same tasks in a familiar, routine manner (non-novel-integration cue, IC).

Methods: While recording changes in CBV, six healthy, right-handed male subjects performed a series of activities beginning with three rudimentary tasks. The isolated tasks included observing a familiar face (Visual), right-hand finger tapping (Motor), and reciting the alphabet (Speech). Each task lasted 20 seconds, followed by a relaxation period and was repeated three times. The tasks were then integrated by using a finger puppet with the same familiar face manipulated by the subject while reciting the alphabet. The tasks were then integrated sequentially in a novel manner by manipulating a cartoon puppet with eyes while reciting the alphabet (Novel-IC). During each activity, changes in CBV (near-infrared spectroscopy (NIRS), oxyhemoglobin (oxHb), and total hemoglobin (tHb)) were measured sequentially in the frontal, left parietal, and occipital lobes using the Hitachi ETG-100 Optical Topography System.

Results: Overall, CBV significantly increased for all measures, across all lobes, with each stimulus ($p < 0.01$). No significant differences in mean maximal CBV increase was found between IC and any individual task alone. However, Novel-IC was associated with a significantly greater increase in parietal oxHb and tHb ($p < 0.02$) and frontal tHb ($p < 0.01$) over IC. The youngest subjects consistently had the greatest increases for all measures.

Conclusion: CBV is greatly enhanced by integrating rudimentary tasks in a novel, spontaneous manner. This study provides physiologic support for a relationship between play and learning, especially for young children.

BACKGROUND

Play is a fundamental factor in the lives of humans and other species (birds to primates). This complex, multi-faceted activity is hard-wired into our genetic code, is instinctive, promotes creativity, helps us learn and adapt, and probably is essential for human development. Play is difficult to define and may be best thought of in terms of its components: curiosity, discovery, novelty, risk-taking, trial and error, pretense, games, social etiquette and other ever more complex adaptive activities – many of the same components of learning.³ Although a relationship between play and learning seems intuitive, studying and quantifying this relationship has been slow because of difficulty defining play and lack of techniques to study physiologic responses.

In order to gain insight into the complex relationship between play and learning, we defined play rather simply as the novel spontaneous integration of rudimentary tasks and examined the central nervous system response to this activity by measuring changes in cerebral blood volume using near-infrared spectroscopy.⁴

Integration of rudimentary tasks in a novel, spontaneous manner will increase cerebral cortical blood volume to a greater extent than the integration of the same tasks in a familiar, routine manner.

METHODS

Subjects: After discussion of the general study outline, six right-handed healthy male subjects (ages 9, 15, 18, 39, 50, 58 years) were seated in a quiet room, asked to relax and keep their eyes closed. Each subject was then fitted with the multichannel NIRS probes (Hitachi Optical Topography®).

Tasks: While measuring changes in cortical CBV (Hb, oxHb, and tHb) in the occipital, left parietal, and frontal areas, each subject was instructed to perform rudimentary visual, motor and speech tasks:

Visual: Open eyes and gaze at the image of a familiar face for 20 seconds. **Motor:** Finger tapping for 20 seconds while relaxed with eyes closed. **Speech:** Subjects were asked to recite the alphabet for 20 seconds. Each task was followed by a 20-second relaxation period and repeated three times.

Novel-IC: The subjects were asked to integrate the rudimentary tasks by opening their eyes and observing the manipulation of a finger puppet with the same familiar face while reciting the alphabet. The integration task lasted for 20 seconds with a 50 second relaxation time.

The rudimentary tasks were then integrated in a novel, spontaneous manner.

Novel-IC Integration (Novel-IC): The subjects were asked to integrate the rudimentary tasks by opening their eyes and observing the manipulation of an unfamiliar cartoon frog puppet while speaking in a spontaneous manner for the puppet. The integration task lasted for 20 seconds with a 50 second relaxation time.

Measurement of CBV: During each task, changes in cerebral blood volume were measured over the occipital, left parietal, and frontal cortex with the NIRS probes. The NIRS probe array allowed the detection of changes in Hb, oxHb and tHb in 24 contiguous areas in each channel.



The maximum increase in Hb, oxHb, and tHb in each channel were determined, averaged and plotted. The absolute maximum changes in each parameter for the entire array was also determined and plotted.

RESULTS

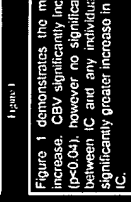
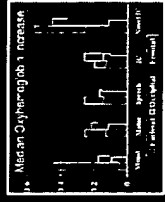


Figure 1 demonstrates the median maximal increase in CBV and the global maximal increase. CBV significantly increased for all measures, across all lobes with each stimulus ($p < 0.01$), however no significant differences in mean maximal CBV increase was found between IC and any individual task alone. However, Novel-IC was associated with a significantly greater increase in parietal oxHb and tHb ($p < 0.02$) and frontal tHb ($p < 0.01$) over IC.

Figure 2 examines median total Hb increase among all stimuli. Were all stimuli to produce no increase, the polygons would appear as a single point, were they to produce the same increase, the polygons would be regular. However, this graph demonstrates that not only did CBV increase on average, but greatest increases were consistently seen with Novel-IC. Change in Hb was significantly correlated with age (Figure 3), such that smaller changes in Hb were seen as subjects' age increased ($p < 0.01$). Weakest linear correlations were seen in the frontal and parietal lobes during novel and non-novel integration ($r = 0.08$, $p < 0.09$), as these relationships suggested an exponential decrease.

CONCLUSIONS

The novel, spontaneous integration of rudimentary tasks (our definition of play), significantly increased cerebral cortical blood volume over the integration of the same tasks in a more familiar non-novel manner. This increase was especially evident in the frontal (considered to be an important integration site) and the parietal lobes. The increase was greatest in the youngest subjects.

REFERENCES

- 1) Brownlee S. Play, It's not just fooling around. *U.S. News and World Report*, 1987; Feb 3:45
- 2) Gilman S. Newman SW. *Clinical Neurophysiology and Neuropsychology*, 8th ed. FA Davis, Philadelphia, 1982, pages 225-230.
- 3) Brown SL. Animals at Play. *National Geographic Magazine*, 1994; 183:2-35.
- 4) Brown DW, Plot PA, Charavi Natch J, Springett R, Delly DT, Lee T, Y. Quantitative near infrared spectroscopy measurement of cerebral hemodynamics in newborn piglets. *Pediatric Research* 2002; 51:564-570.